

OPERATING INSTRUCTIONS FOR THE SGX 2000 EXPRESS

ADDENDUM TO THE SGX 2000 REFERENCE MANUAL

A.R.T. has increased the power of the SGX 2000 by 400% and kept the ease of use factor unchanged. There are some variations between the two units which will be explained in this addendum. All other functions remain the same.

Included in the EXPRESS are:

- * Hundreds of new presets!
- * Enhanced reverb algorithms!
- * More gain!
- * Dual pitch transposer
- * Expanded digital tuner
- * Space Phaser!
- * Regenerated delay time increased
- * Refined acoustic environment simulator!
- * Expanded MIDI implementation!

Use this manual to reference all features and functions of your new SGX 2000 EXPRESS processor. Refer to the large reference manual for hook-up diagrams and "getting started" suggestions.

Included in this addendum:

- Enhanced user interface
- Preset bank selection
- Recalling presets
- Storing presets
- Creating presets
- Banks
- Organizing Presets
- Preset hints
- Preset list
- Dual Pitch Transposer
- Space Phaser
- Expanded Digital Tuner

Changes in the main reference manual:

Page Number	Section	Explanation	Refer to New Section
3	PWR OUT	Power out jack	No new section
3	LCD	Liquid crystal display	Throughout this text
4	PRESET	Preset selection	Throughout this text
5	EDIT MODE	Preview presets	Throughout this text
6	STORE	Storing presets	Throughout this text
7	TITLE EDIT	Characters in title	Throughout this text
7	Utility	Addition of utilities	Throughout this text
8	X-15	How to use with	ART X-15
11	SWEPT	Addition of Phaser	Space Phaser
12	REGEN DDL	Delay time longer	Refined Algorithms
14	TUNER	Expanded parameters	Digital Tuner
16	MISC.	About the presets	Throughout this text
26	WARRANTY	Amended warranty	Warranty
27-29	PRESET	New preset list	

All reverb algorithms, natural and fabricated (halls, rooms, gated) have been redone allowing you to experience great sounding effects. No change to the user interface for creating patches with reverb was necessary. When creating patches, just listen to the reverb type to determine which space is right for you.

We have expanded the Digital Tuner to accommodate a wider range of tuning options. Included in the new options are a reference oscillator which produces a reference tone at the outputs to speed your tuning (or to give someone else in the band a tone to tune to) and the option of tuning to 12th fret harmonics. The delay length of the Regenerated Delay has been increased from a maximum delay time of 1150ms to 1300ms.

ENHANCED USER INTERFACE

PRESET BANKS, WHAT'S IN THEM

When hundreds of presets are available in a device, you must make it effortless to access them all, as well as group them, in an intelligent fashion. A.R.T. has created "banks" of presets to supply you with every possible need. Four banks of factory presets, with a total of **475** patches, have been created for the SGX 2000 EXPRESS. The first bank, titled **CLASSIC** and designated by the letter "A", contains **125** instant use presets for the guitar. In bank two, the "B" bank, you will find **116 PERFORMANCE** presets. These presets emulate guitar sounds as you would hear them on the radio from various types of artists and also through different types of amplifiers. Bank "C", the third bank is the **PRODUCTION** bank of the SGX 2000 EXPRESS. This bank contains **111** patches you would use in a studio/recording situation. The last bank "D", **CONTRIBUTION**, contains **123** patches created by recording engineers and artists worldwide.

Bank "A" CLASSIC

We've put together a small sample of the multitudes of sound capabilities the SGX 2000 EXPRESS has waiting inside for you to experience! The first 40 presets start off with ripping lead (1-10) patches and acoustic/clean lead (11-20) patches. Presets 21-22 feature the Digital tuner. The first one is silent, allowing you to tune in private, and the second one is set up to automatically detect the string you are tuning and put out a tone of that frequency through your amp! Even if you don't need an "E", perhaps someone without an SGX 2000 EXPRESS does! X-15 ready patches (23-28) show off just what the SGX 2000 Express is capable of when used with the ART X-15 MIDI Controller pedal. To finish off the tour, there are ten semi-dirt, lead/rockin' rhythm patches (29-40).

It doesn't stop there, starting at preset 41 and continuing to preset 75 are 35 more guitar solo lead patches! Everything from overdriven ripping lead sounds, "effected" leads, milder dirty leads to "clean" (no distortion!) lead patches. Don't limit these to just lead patches, there are other ways for you to decide how to use them. Starting with preset 76, rhythm, chunka chunka, dirt, grunge, overdrive, semi-overdriven, and yes, even clean patches are all contained in the group up to preset 109. Be sure to check out presets 101-115 for some outrageous effects! Buried guitar leads, various wah-wah tremolo, sampling, pitch shifting, delay, panning and phasing are all featured here. Not enough?, it doesn't stop here, you still have three more banks of exciting sounds to go!

Bank "B" PERFORMANCE

The first 72 presets reflect guitar sounds from various recordings and artists you are sure to recognize. Next, from preset 73 to 93, are emulations of classic amplifier sounds. From preset 94 to 116, you will find presets set up for keyboard and MIDI controllers. Use your imagination and capitalize on these plug in and sound like presets!

Bank "C" *PRODUCTION*

Individual effects in a patch, small rooms with different mic placements, clean/dirty miced amps, drum and vocal reverb patches are all represented here. From preset 1 to preset 29, each individual effect has its own patch. This allows you to just use chorus or compression or any other effect alone. Also, the effects parameters are set at their "default" value. The value each parameter of the effect comes up with when you are building your own patches. From preset 30 to 68 listen to all the different types of rooms you can have for your guitar sounds. Dirt, clean, close miced, not-so-close miced, effected, bright, warm and muddled; the possibilities seem endless. The next set of presets were set up to be used specifically with your SGX 2000 EXPRESS patched into a mixing board or console. Vocals and drums may be processed with patches 69 through 111. **For the vocal and drum patches, the mix has been set for all "wet".** This allows you to mix in the amount of "dry" signal to your needs from whatever board (preferably an A.R.T. PHANTOM) you are working from. Remember not to limit your use of these patches to what we say they were built for!

Bank "D" *CONTRIBUTION*

Artists, producers, and engineers worldwide compiled these presets. Presets range from rock lead, clean/dirty rhythm, to the totally bizarre. As with the other banks, presets are arranged from lead patches to dirt/clean rhythm, to "special effects". Preset 1-24 are "lead" patches from straight dirt to flanged to chorus to delay and ending with pitch shifting. Dirt rhythm patches start at preset 25 and go to 59. The effects pattern is the same progression as the lead. Next, from preset 60 to 90, thirty-one "clean" patches are available. The effect progression goes from clean to flange to chorus to delay. Last but not least, from preset 91 to preset 123 are presets we labeled "special"! Thirty-three presets with primary effects starting with flange, chorus, delay, tremolo, "bizarre!", wah, pitch transposing and ending with a few extra!

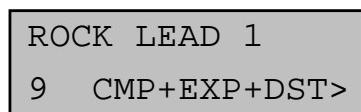
Bank "U" *USER*

Your own presets are stored in memory slots designated as "U" presets. When you create presets whether by starting from scratch, or modifying an existing factory preset, that preset is stored in "User" memory. Though there is no actual bank "U" assessable through the Utility function, the preset is labeled "U" in the title bar when you store a preset.

PRESET BANKS, HOW TO USE THEM

WHERE AM I?

To find out which bank of presets you are in, look at the title in the LCD window. The last space on the top line of the LCD (the title bar) is reserved to show you the bank designator. A capital letter "A", "B", "C", "D", or "U" will be visible in reversed text.



This diagram displays a preset in bank "A". The top line shows the preset title and the bank designator (last character space). Look at the numeric display to the right of the LCD for the actual preset number.

To switch between presets in a bank, be sure the PRESET LED is lit. If it isn't, press the Preset button. Now use the Encoder to select the preset you wish. The preset number will be displayed by the seven segment display. You may also select presets by entering the preset with the alphanumeric keypad (see main reference manual).

To switch banks, press the Edit Mode button, now press the Utility button. This puts you into utility mode. One of the utilities is switching banks, turn the Encoder until you see:

"CLASSIC" BANK = or "PERFORMANCE" BANK = or "PRODUCTION" BANK = or "CONTRIBUTION" BANK =

The name of the bank is on the top and the bank designation letter is on the bottom. Now press the value button and turn the Encoder until you see the bank you wish to access. Press the Preset button to return to preset select mode and use the encoder to select presets. You will notice the bank indicator letter as the last character in the title bar. After you first switch between banks, the last preset you used will still be displayed in the LCD. This is normal, just turn the Encoder or use the keypad to select your next preset.

STORING PRESETS, I LIKE SOME, HOW DO I GET THEM IN ONE PLACE?

Having hundreds of presets at your fingertips is great! Switching between banks and scrolling through presets is not the most efficient way to use your SGX 2000 EXPRESS! To make life easier, you should arrange the presets you are going to use in one spot. Here's how to do it.

PRESET SLOTS

First of all there are 200 preset "slots" in the SGX 2000 EXPRESS. Each slot may hold a preset permanently in RAM if you store it there. If you store a preset in "slot 1", every time you access preset 1 in any bank, the preset you stored in "slot 1" will be present. Obviously you may not want that to happen. What we suggest is to first listen to all the presets in the SGX 2000 EXPRESS and write down the bank and preset number of the presets you like and think you will use on a separate sheet of paper. Now, it's time to store those presets into slots which will not copy over factory presets. As an added precaution to overwriting factory presets, there is a "Lock" utility which you can turn on or off. See the Utility section in the main reference manual for more information. We suggest you start storing your presets beginning with slot 200 and working down.

STORE PRESET

Storing presets is easy. While in preset mode, find a preset in whichever bank you are in, press the Edit button, use the Encoder to select a memory slot, (the numeric display will start flashing the preset number) press the Store button. You have now stored the preset into that memory slot. If no changes were made, the bank designator letter will indicate

which bank the preset came from. If you modified a preset or created one from scratch, the bank designator letter will change to a "U" indicating the preset is your work. If the preset location was blank, the LCD will look like:

BLANK PRESET
<no effects>

NOTE: If you store any preset over an existing factory preset in any bank, that preset will overwrite each existing factory preset in each bank! We suggest you start storing your presets starting with slot 200 and working down.

WHERE DID THE PRESET COME FROM

If you juggle and shift presets around as well as making your own and then store them in user memory slots, you may lose track of which preset number in the bank you chose. In the Utility Mode, there is an easy way to find out where the preset came from. At any time, press the Edit button, and then the Utility button. You will see a display in the LCD which looks like:

OPEN USER RAM (U) BANK A, # 91
SLOT = 19 or SLOT = 19 or SLOT = 19

The first window indicates no preset is stored into the memory slot and it is "open", ready to have information stored into it. In the second window, the display indicates a user preset (a preset you created) is stored into that memory slot location. The last display indicates preset 91 from bank "A" is stored in memory slot 198.

RECALLING A FACTORY PRESET

If you store over a factory preset memory slot, you do not lose the four factory presets in that location forever. You may recall any factory preset from any bank at any time. Again you enter Utility Mode to access this function.

To recall a factory preset first press the Edit Mode button and then the Utility button. Press the Value button until the display looks like:

"CLASSIC" "PERFORMANCE" "PRODUCTION" "CONTRIBUTION"
BANK = or BANK = or BANK = or BANK =

Select the bank you which to recall a preset from with the Encoder. Now, press the Value button until you see

HIT RECALL FOR
A.R.T. PRESET #

in the LCD window. Use the Encoder to select the preset number and then press the Recall button. the preset then becomes active at the memory slot you are currently in. You now have the option to store the preset in this memory slot or transfer it to another. To store in the current slot, just press Store now. If

you want to store it elsewhere, press the Edit button and select a preset slot with the Encoder and then press Store.

USING THE ART X-15 WITH YOUR SGX 2000 EXPRESS

RECALLING PRESETS

You can access all two hundred memory slots of the SGX 2000 Express with your X-15. The MPT of the SGX 2000 EXPRESS may reconfigured to select the preset of your choice to correspond with the X-15's preset number. Operate the X-15 by selecting a "bank of ten" using the Arrow Up/Down pads, then select one of the numbered pads to recall the preset. Press the Mode pad to enable you to turn on and off the individual effects in the preset you've selected.

USING THE CONTROLLER PEDALS

You will notice some of the presets have MIDI controllers assigned to control an effects parameter in the preset. Use the controller pedals on the X-15 to control the parameters. If you set up a preset in the SGX 2000 EXPRESS, remember, **you do not have to program the X-15**, all programming is done with the SGX. Refer to the main manual for instructions to add MIDI controllers to presets.

HINTS FOR PRESETS

The first thing you should do is check out all the presets in your SGX 2000 EXPRESS. Sure it will take time, but you really should find all the sounds we have created for you. All presets were developed with the front panel knobs at twelve o'clock except for the Drive and Master Output which were set at 3 o'clock. The sliders were centered. Each preset has a Programmable Level utility built into it. Use this utility to adjust the preset's master level to your taste. Refer to the main reference manual for hints on setting your levels.

Organize the presets you will use in the upper memory slots starting with slot 200 and then working down. This will help you keep them from being overwritten and in one spot for easy reference. Access the presets you store in the upper memory slots with a preset select pedal via the MIDI Program Table (MPT). You may assign any preset to a MIDI Program Number. See the main reference manual for examples of editing the MIDI Program Table.

NEW ALGORITHMS

DUAL PITCH TRANSPOSER

[DUAL PTr], [2PT]

Parameters:

:TYPE= [SMOOTH] OFF, SMOOTH, NORMAL, QUICK

:PITCH 1 = [0] (-)12 to (+)12 half steps in 1 half step increments

:FINE 2 = [0.00] (-)4.00 to (+)4.00 half steps in 0.06 (six cents) increments

:PITCH 2 = [0] (-)12 to (+)12 half steps in 1 half step increments
:FINE 2 = [0.00] (-)4.00 to (+)4.00 half steps in 0.06 (six cents) increments
:REG-FD = [PRE] PRE, POST
:LEVEL = [100%] 0 to 100 percent level in % increments
:POSTN1 = [31] 0 to 63 in on step intervals
:POSTN2 = [31] 0 to 63 in on step intervals

Pitch Transposing or pitch shifting can be used to develop helpful second harmonies or other effects for vocals, instruments and even mixed material.

There are three "types" of pitch transposing to choose from in the SGX 2000 EXPRESS: Smooth, Normal and Quick. Smooth relates directly to processing and splicing the signal more slowly, resulting in a cleaner more precise sound. Use the Smooth setting when you are shifting pitch more than a fifth with lower frequency inputs such as the low strings on a guitar. Normal should be used for virtually all other applications of pitch shifting. There is a little less delay than the Smooth setting and qualitative processing is achieved. When you select the Quick setting, a shorter delay time is used causing faster splicing.

Generally you should use the Normal Type for most applications. If you encounter problems relating to delay time, use the Quick Type, and if detuning becomes a problem, use the Smooth Type.

The PITCH control lets you set the range of pitch change in half steps. The FINE parameter lets you adjust the pitch in 6 cent intervals. Use the fine tune parameter to create or adjust micro pitch shifting or fat chorusing effects.

REGENeration is useful when you stack the Pitch Transposer with the MONO DDL algorithm. Each time a repeat is done it is shifted up or down by the pitch selected.

The Base Key parameter should be used when triggering the Pitch Transposer from a MIDI keyboard. The amount of pitch shift may be set by MIDI Note On messages. The values selected in the Base Key parameter correspond to the MIDI Key Number.

Example: BASE KEY = 60, (= middle C) if a D above middle C is played, the shift amount will be set to (2). If base key is set to OFF, Note On messages will not affect pitch.

The Dual Pitch Transposer allows you to assign two separate intervals of pitch shifting at once. Interesting pitch combinations like a fifth combined with an octave (7 and 12 half-steps), really fat chorusing (+0.12 and -0.12 half-step), and chorusing with pitch shifting (+0.18 and any half-step interval) can be accomplished with this algorithm.

The parameters of the Dual Pitch Transposer algorithm are pretty much the same as the normal Pitch Transposer. New Pitch and Fine parameters have been added for the second interval. The two Pitch and Fine parameters are labeled as 1 and 2 (i.e. Pitch1, Fine 2).

Regeneration Feed ([RGN-FD]) controls where the digital delay's (if used) regeneration comes from. The insert point is either before (PRE) or after (POST) the first voice. When the Stereo Digital Delay is used with the Dual Pitch Transposer and the RGN-FD is set to POST, the glissando effect of the normal Pitch Transposer is the result. Use the PRE setting, for a simple pre delay before the pitch shift occurs. Only the Short Stereo Delay is available for use with the Dual Pitch Transposer.

The Position ([POSTN1 and 2]) parameter lets you set where in the sound field each individual pitch is heard. The default setting is center field. When the value is 0, the signal appears full right. A value of 63 is full left.

SPACE PHASER

[PHASER], [PSR]

Parameters:

TYPE= [POST] OFF, POST, PRE

WIDTH= [65%] 0 to 100% in % increments

SPEED= [0.84Hz] 0.04Hz to 27.3Hz

REGEN= [50%] 0 to 100% in % increments

DEPTH= [100%] 0 to 100% in % increments

The Phaser algorithm recreates classic phaser sounds from the past. A three notch design is used to develop stunning effects, killer sounds, and of course, pure sonic destruction!

The sweep WIDTH and SPEED is user controlled. REGENeration may be adjusted to vary the "strength" of the processed signal. The DEPTH parameter controls the intensity of the effect in the preset. When the TYPE= POST the phaser is positioned last in the chain. This is to assure that maximum effect and presence is maintained in all effects combinations. Using TYPE= PRE positions the Phaser in parallel with any Reverb or DDL effect. By positioning the Phaser like this, the processed signal is not delayed or reverberated and then phased.

DIGITAL TUNER

[TUNER], [TNR]

Parameters:

TYPE = [GUITAR] BASS, GUITAR, BASS12F, GTR12F

REFRNC (guitar) = [OFF] OFF, E 82, A 110, D 147, G 196, B 247, E 330, A 440,

AUTO (gtr12f) = [OFF] OFF, E 164, A 220, D 284, G 392, B 494, E 659, A 440, AUTO
(bass) = [OFF] OFF, B 31, E 41, A 55, D 73, G 98, C 131, A440, AUTO

(bass12f) = [OFF] OFF, B 62, E 82, A 110, D 146, G 196, C262, A 440, AUTO

DETUNE = [0.00] (-)2.00 to (+)2.00 in 0.04 (four cent) intervals

LEVEL = [0%] 0 to 100% in 2% increments

Type allows you to choose what instrument you are going to tune. There are four choices, two for Guitar and two for Bass. Open string tuning can be done when you select either the GUITAR or BASS TYPE. Select TYPE GTR12F or BASS 12F to tune your instrument to the twelfth fret. After you choose what "type" of instrument, the Reference frequency (Refrnc) parameter defaults to the appropriate Guitar or Bass tuning frequencies. The strings start low and go high. The frequency A 440 is included for tuning keyboards, or checking the intonation of your neck. When you select Refrnc to equal Off, it allows you to access the preset and display the preset number instead of [---]. The Tuner at this point is inactive, you must change the Refrnc parameter to a string value to activate the Tuner. When you set the Refrnc parameter to Auto, tuning is simplified even more. Auto enables the SGX 2000 EXPRESS to know which string you are trying to tune and automatically switch the Reference parameter to the correct string/frequency. The Auto range has a frequency window of 2.5 half steps.

Detune will let you change the reference frequency A 440 plus or minus 2 half steps. This allows you to detune up to 50Hz. As a rule of thumb 4 cents, displayed as [0.04] equals 1Hz. So, to detune A440 to A435 you would set the Detune parameter to [-0.20]. To detune a full half step, set the Detune parameter to = [1.00] (plus or minus). Level sets the signal output level of the Tuner in a preset.

TUNER NOTES:

- 1) If you do not wish anyone to hear you tune up when you realize you're out of tune, set the Tuner Level and the ANFX level of the Mix to [0%] in the preset.
- 2) If you want signal to pass through the tuner, set the Tuner Level and the ANFX Level to the desired output level. The tuner is designed to respond to open string tuning only, no harmonics. For best results, tune your guitar in the position you will be playing in. Plucking the string at or near the 12th fret will help the tuner lock on to the signal.
- 3) Accuracy of the SGX 2000 EXPRESS Tuner is better than .5 cents!
- 4) 100 cents = 1 semitone = 1 half step.

Select presets 21 and 22 in Bank "A" STRAIGHT TUNER and TUNERTONE for quick tuning while on stage. These presets are set up to auto detect which string you are playing and display the tuning scale on the front panel.

THINGS TO NOTE:

PWR OUT

There is no (+)9 Volt power out jack on the SGX 2000 EXPRESS.

UTILITY

Two new Utilities are present when the Utility Mode is accessed:

- 1) "SLOT" Information
- 2) "BANK" Information

WARRANTY INFORMATION

LIMITED WARRANTY

Warranty service for this unit will be provided by Applied Research & Technology, Inc. in accordance with the following warrant statement.

Applied Research & Technology, Inc. warrants to the original purchaser that this product and the components thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase. Applied Research & Technology, Inc. (ART) will, without charge, repair or replace, at its option, defective product or component parts upon prepaid delivery to the factory service department or authorized service center, accompanied by proof of purchase date in the form of a valid sales receipt.

EXCLUSIONS: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. This warranty is void if the serial number is altered, defaced, or removed.

ART reserves the right to make changes in design or make additions to or improvements upon this product without any obligation to install the same on products previously manufactured.

ART shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific rights and you may also have other rights which vary from state to state.

For units purchased outside The United States, service will be provided by an authorized distributor of Applied Research & Technology, Inc.